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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,133	03/31/2004	Bo Xia	1000-0037	9199

7590 05/04/2007
The Law Offices of John C. Scott, LLC
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EXAMINER	
TORRES, JOSEPH D	

ART UNIT	PAPER NUMBER
2112	

MAIL DATE	DELIVERY MODE
05/04/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/815,133	XIA ET AL.	
	Examiner	Art Unit	
	Joseph D. Torres	2112	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 and 30-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 and 30-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date: _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>07/15/2005</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse in the reply filed on 04/02/2007 is acknowledged.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 4, 5, 8-10, 18-20, 33, 37 and 38 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 recites the limitation "the matrix" in line 2. There is insufficient antecedent basis for this limitation in the claim. Note: "the matrix " is not mentioned in any of the previous limitations of claim 4 and claims from which claim 4 depends.

Claim 4 recites the limitation "the list file" in line 2. There is insufficient antecedent basis for this limitation in the claim. Note: "the list file" is not mentioned in any of the previous limitations of claim 4 and claims from which claim 4 depends.

Claim 4 recites the limitation "Appendix A" in line 2. There is insufficient antecedent basis for this limitation in the claim. Note: "Appendix A" is not mentioned in any of the previous limitations of claim 4 and claims from which claim 4 depends.

Claim 5 recites the limitation "the list file" in line 2. There is insufficient antecedent basis for this limitation in the claim. Note: "the list file" is not mentioned in any of the previous limitations of claim 5 and claims from which claim 5 depends.

Claim 5 recites the limitation "Appendix A" in line 2. There is insufficient antecedent basis for this limitation in the claim. Note: "Appendix A" is not mentioned in any of the previous limitations of claim 5 and claims from which claim 5 depends.

Claim 5 recites the limitation "the matrix" in line 2. There is insufficient antecedent basis for this limitation in the claim. Note: "the matrix " is not mentioned in any of the previous limitations of claim 5 and claims from which claim 5 depends.

Claim 8 recites the limitation "the matrix" in line 2. There is insufficient antecedent basis for this limitation in the claim. Note: "the matrix " is not mentioned in any of the previous limitations of claim 8 and claims from which claim 8 depends.

Claim 8 recites the limitation "the list file" in line 2. There is insufficient antecedent basis for this limitation in the claim. Note: "the list file" is not mentioned in any of the previous limitations of claim 8 and claims from which claim 8 depends.

Claim 8 recites the limitation "Appendix A" in line 2. There is insufficient antecedent basis for this limitation in the claim. Note: "Appendix A" is not mentioned in any of the previous limitations of claim 8 and claims from which claim 8 depends.

Claim 9 recites the limitation "the list file" in line 2. There is insufficient antecedent basis for this limitation in the claim. Note: "the list file" is not mentioned in any of the previous limitations of claim 9 and claims from which claim 9 depends.

Claim 9 recites the limitation "Appendix A" in line 2. There is insufficient antecedent basis for this limitation in the claim. Note: "Appendix A" is not mentioned in any of the previous limitations of claim 9 and claims from which claim 9 depends.

Claim 9 recites the limitation "the matrix" in line 2. There is insufficient antecedent basis for this limitation in the claim. Note: "the matrix " is not mentioned in any of the previous limitations of claim 9 and claims from which claim 9 depends.

Claims 10, 20 and 38 recite, "(2000, 1600) bit-length code", which is indefinite since (2000, 1600) is not a length.

Claim 18 recites the limitation "the matrix" in line 2. There is insufficient antecedent basis for this limitation in the claim. Note: "the matrix " is not mentioned in any of the previous limitations of claim 18 and claims from which claim 18 depends.

Claim 18 recites the limitation "the list file" in line 2. There is insufficient antecedent basis for this limitation in the claim. Note: "the list file" is not mentioned in any of the previous limitations of claim 18 and claims from which claim 18 depends.

Claim 18 recites the limitation "Appendix A" in line 2. There is insufficient antecedent basis for this limitation in the claim. Note: "Appendix A" is not mentioned in any of the previous limitations of claim 18 and claims from which claim 18 depends.

Claim 19 recites the limitation "the list file" in line 2. There is insufficient antecedent basis for this limitation in the claim. Note: "the list file" is not mentioned in any of the previous limitations of claim 19 and claims from which claim 19 depends.

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Claim 19 recites the limitation "Appendix A" in line 2. There is insufficient antecedent basis for this limitation in the claim. Note: "Appendix A" is not mentioned in any of the previous limitations of claim 19 and claims from which claim 19 depends.

Claim 19 recites the limitation "the matrix" in line 2. There is insufficient antecedent basis for this limitation in the claim. Note: "the matrix " is not mentioned in any of the previous limitations of claim 19 and claims from which claim 19 depends.

Claim 33 recites the limitation "the matrix" in line 2. There is insufficient antecedent basis for this limitation in the claim. Note: "the matrix " is not mentioned in any of the previous limitations of claim 33 and claims from which claim 33 depends.

Claim 33 recites the limitation "the list file" in line 2. There is insufficient antecedent basis for this limitation in the claim. Note: "the list file" is not mentioned in any of the previous limitations of claim 33 and claims from which claim 33 depends.

Claim 33 recites the limitation "Appendix A" in line 2. There is insufficient antecedent basis for this limitation in the claim. Note: "Appendix A" is not mentioned in any of the previous limitations of claim 33 and claims from which claim 33 depends.

Claim 37 recites the limitation "the matrix" in line 2. There is insufficient antecedent basis for this limitation in the claim. Note: "the matrix " is not mentioned in any of the previous limitations of claim 37 and claims from which claim 37 depends.

Claim 37 recites the limitation "the list file" in line 2. There is insufficient antecedent basis for this limitation in the claim. Note: "the list file" is not mentioned in any of the previous limitations of claim 37 and claims from which claim 37 depends.

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Claim 37 recites the limitation "Appendix A" in line 2. There is insufficient antecedent basis for this limitation in the claim. Note: "Appendix A" is not mentioned in any of the previous limitations of claim 37 and claims from which claim 37 depends.

Claim Objections

3. Claims 4, 5, 8, 9, 18 and 19 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claims 4, 5, 8, 9, 18 and 19 fail to recite a meaningful limitation that further limits respective parent claims 1 and 15.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1, 2, 4-10, 15-20 and 34-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang (Michael Yang, Yan Li and William E. Ryan; Design of Efficiently Encodable Moderate-Length High-Rate Irregular LDPC Codes; Proceedings of the Annual Conference on Communication, Control and Computing, October 2, 2002, pages 1415-1424) [hereafter referred to as Yang] in view of Lu et al. (Ben Lu, Xiaodong Wang, and Krishna R. Narayanan; LDPC-Based Space-Time Coded OFDM Systems Over Correlated Fading Channels: Performance Analysis and Receiver Design; IEEE TRANSACTIONS ON COMMUNICATIONS, VOL. 50, NO. 1, JANUARY 2002, pages 74-88) [hereafter referred to as Lu].

35 U.S.C. 103(a) rejection of claims 1, 15 and 34.

Yang teaches a forward error correction FEC coder to encode digital data using a low density parity check LDPC code (Figure 1(a) on page 1420 in Yang), said FEC coder including: a matrix multiplication unit to multiply input data by a transpose of a first portion of a parity check matrix to generate modified data (H_1^T block in Figure 1(a) on page 1420 in Yang and Equation 4 on page 1418 of Yang); a differential encoder to differentially encode said modified data to generate coded data ($\frac{1}{1 \oplus D}$ block on page 1420 of Yang; also see last two paragraphs on page 1419 of yang); and a concatenation unit to concatenate the input data and the coded data to form a code

word (Figure 1(a) on page 1420 in Yang teaches that a codeword *c* is comprised of the input bits concatenated with the parity bits, which clearly suggests a concatenation unit). However Yang does not explicitly teach the specific use of a wireless transmitter to transmit a wireless signal that includes said code word.

Lu, in an analogous art, teaches use of a wireless transmitter to transmit a wireless signal that includes said code word (Abstract in Lu). Lu teaches that use of LDPC coding for wireless OFDM systems can significantly improve system performance by exploiting both spatial diversity and selective fading diversity (Abstract in Lu). The Top of column 2 on page 74 in Lu teaches that antenna array spatial diversity and channel coding can provide significant capacity gains in wireless communications.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Yang with the teachings of Lu by including use of a wireless transmitter to transmit a wireless signal that includes said code word. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of a wireless transmitter to transmit a wireless signal that includes said code word would have provided improved system performance by exploiting both spatial diversity and selective fading diversity (Abstract in Lu) and significant capacity gains from antenna array spatial diversity and channel coding (Top of column 2 on page 74 in Lu).

35 U.S.C. 103(a) rejection of claims 2, 16 and 35.

Abstract in Lu.

35 U.S.C. 103(a) rejection of claims 4, 5, 18, 19 and 37.

Claims 4 and 5 fail to further limit claim 1 in a meaningful way, hence; are rejected for the same reasons as claim 1.

35 U.S.C. 103(a) rejection of claims 6, 17 and 36.

The H_1^T block in Figure 1(a) on page 1420 in Yang clearly suggests a mechanism for storing information about the parity check matrix so that H_1^T can be used to generate codewords.

35 U.S.C. 103(a) rejection of claim 7.

Since H_2 on page 1419 of Yang is substantially is substantially a Tanner Graph;

H_1^T substantially defines the parity matrix H in Equation 5 on page 1419. Note also:

A in the last paragraph on page 1419 of Yang is and LDPC for Figure 1(b) on page 1420 in Yang.

35 U.S.C. 103(a) rejection of claims 8 and 9.

Claims 4 and 5 fail to further limit claim 1 in a meaningful way, hence; are rejected for the same reasons as claim 1. Note: Figure 4 on page 80 of Lu teaches weight 4 LDPC codes.

35 U.S.C. 103(a) rejection of claims 10, 20 and 38.

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The last paragraph on page 1416 of Yang teaches an arbitrary size (k, n) LDPC codes, which encompasses a particular (1600,2000) code.

5. Claims 3 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang (Michael Yang, Yan Li and William E. Ryan; Design of Efficiently Encodable Moderate-Length High-Rate Irregular LDPC Codes; Proceedings of the Annual Conference on Communication, Control and Computing, October 2, 2002, pages 1415-1424) [hereafter referred to as Yang] and Lu et al. (Ben Lu, Xiaodong Wang, and Krishna R. Narayanan; LDPC-Based Space-Time Coded OFDM Systems Over Correlated Fading Channels: Performance Analysis and Receiver Design; IEEE TRANSACTIONS ON COMMUNICATIONS, VOL. 50, NO. 1, JANUARY 2002, pages 74-88) [hereafter referred to as Lu] in view of Goldstein; Yuri et al. (US 6862552 B2, hereafter referred to as Goldstein).

35 U.S.C. 103(a) rejection of claims 3 and 21.

Yang and Lu substantially teaches the claimed invention described in claims 1 and 2 (as rejected above).

In addition, Yang and Lu teach a mapper, between said FEC coder and said wireless transmitter, to map said code word based on a predetermined modulation scheme (column 2, page 74 of Lu).

However Yang and Lu do not explicitly teach the specific use of an inverse discrete Fourier transform unit to convert mapped data from a frequency domain representation to a time domain representation.

Goldstein, in an analogous art, teaches use of an inverse discrete Fourier transform unit to convert mapped data from a frequency domain representation to a time domain representation (IFFT 16 in Figure 2 of Goldstein).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Yang and Lu with the teachings of Goldstein by including use of an inverse discrete Fourier transform unit to convert mapped data from a frequency domain representation to a time domain representation. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of an inverse discrete Fourier transform unit to convert mapped data from a frequency domain representation to a time domain representation would have provided signal samples results in the time domain (col. 3, lines 45-50 in Goldstein).

6. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang (Michael Yang, Yan Li and William E. Ryan; Design of Efficiently Encodable Moderate-Length High-Rate Irregular LDPC Codes; Proceedings of the Annual Conference on Communication, Control and Computing, October 2, 2002, pages 1415-1424) [hereafter referred to as Yang] and Lu et al. (Ben Lu, Xiaodong Wang, and

Krishna R. Narayanan; LDPC-Based Space-Time Coded OFDM Systems Over Correlated Fading Channels: Performance Analysis and Receiver Design; IEEE TRANSACTIONS ON COMMUNICATIONS, VOL. 50, NO. 1, JANUARY 2002, pages 74-88) [hereafter referred to as Lu] in view of Dougherty; Angus O. et al. (US 6831902 B1, hereafter referred to as Dougherty).

35 U.S.C. 103(a) rejection of claims 11-13.

Yang and Lu substantially teaches the claimed invention described in claims 1 and 2 (as rejected above).

However Yang and Lu do not explicitly teach the specific use of wireless network components.

Dougherty, in an analogous art, teaches use of wireless network components (col. 1, lines 5-15 in Dougherty).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Yang and Lu with the teachings of Dougherty by including use of wireless network components. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of wireless network components would have provided a wide range of services (col. 1, lines 5-15 in Dougherty).

7. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yang (Michael Yang, Yan Li and William E. Ryan; Design of Efficiently Encodable Moderate-

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Length High-Rate Irregular LDPC Codes; Proceedings of the Annual Conference on Communication, Control and Computing, October 2, 2002, pages 1415-1424) [hereafter referred to as Yang] and Lu et al. (Ben Lu, Xiaodong Wang, and Krishna R. Narayanan; LDPC-Based Space-Time Coded OFDM Systems Over Correlated Fading Channels: Performance Analysis and Receiver Design; IEEE TRANSACTIONS ON COMMUNICATIONS, VOL. 50, NO. 1, JANUARY 2002, pages 74-88) [hereafter referred to as Lu] in view of Bordogna; Mark Aldo et al. (US 6683855 B1, hereafter referred to as Bordogna).

35 U.S.C. 103(a) rejection of claim 14.

Yang and Lu substantially teaches the claimed invention described in claims 1 and 2 (as rejected above).

However Yang and Lu do not explicitly teach the specific use of an IC.

Bordogna, in an analogous art, teaches use of an IC (col. 9, lines 52-54 in Bordogna).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Yang and Lu with the teachings of Bordogna by including use of an IC. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of an ASIC would have provided flexibility with the added advantage of speed associated with hardware (col. 9, lines 52-54 in Bordogna).

8. Claims 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang (Michael Yang, Yan Li and William E. Ryan; Design of Efficiently Encodable Moderate-Length High-Rate Irregular LDPC Codes; Proceedings of the Annual Conference on Communication, Control and Computing, October 2, 2002, pages 1415-1424) [hereafter referred to as Yang] in view of Lu et al. (Ben Lu, Xiaodong Wang, and Krishna R. Narayanan; LDPC-Based Space-Time Coded OFDM Systems Over Correlated Fading Channels: Performance Analysis and Receiver Design; IEEE TRANSACTIONS ON COMMUNICATIONS, VOL. 50, NO. 1, JANUARY 2002, pages 74-88) [hereafter referred to as Lu] in further view of Brankovic; Veselin (US 6198460 B1).

35 U.S.C. 103(a) rejection of claim 30.

Yang teaches a forward error correction FEC coder to encode digital data using a low density parity check LDPC code (Figure 1(a) on page 1420 in Yang), said FEC coder including: a matrix multiplication unit to multiply input data by a transpose of a first portion of a parity check matrix to generate modified data (H_1^T block in Figure 1(a) on page 1420 in Yang and Equation 4 on page 1418 of Yang); a differential encoder to differentially encode said modified data to generate coded data ($\frac{1}{1 \oplus D}$ block on page 1420 of Yang; also see last two paragraphs on page 1419 of yang); and a concatenation unit to concatenate the input data and the coded data to form a code word (Figure 1(a) on page 1420 in Yang teaches that a codeword c is comprised of the input bits concatenated with the parity bits, which clearly suggests a concatenation unit).

However Yang does not explicitly teach the specific use of a wireless transmitter to transmit a wireless signal that includes said code word.

Lu, in an analogous art, teaches use of a wireless transmitter to transmit a wireless signal that includes said code word (Abstract in Lu). Lu teaches that use of LDPC coding for wireless OFDM systems can significantly improve system performance by exploiting both spatial diversity and selective fading diversity (Abstract in Lu). The Top of column 2 on page 74 in Lu teaches that antenna array spatial diversity and channel coding can provide significant capacity gains in wireless communications.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Yang with the teachings of Lu by including use of a wireless transmitter to transmit a wireless signal that includes said code word. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of a wireless transmitter to transmit a wireless signal that includes said code word would have provided improved system performance by exploiting both spatial diversity and selective fading diversity (Abstract in Lu) and significant capacity gains from antenna array spatial diversity and channel coding (Top of column 2 on page 74 in Lu).

However Yang and Lu do not explicitly teach the specific use of a dipole antenna.

Brankovic, in an analogous art, teaches use of a dipole antenna (Abstract in Brankovic).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Yang and Lu with the teachings of Brankovic by including use of a dipole antenna. This modification would have been obvious to one of ordinary

skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of a dipole antenna would have provided microwave and millimeter-wave transmission capabilities (Abstract in Brankovic).

35 U.S.C. 103(a) rejection of claim 31.

Abstract in Lu.

35 U.S.C. 103(a) rejection of claim 32.

The H_1^T block in Figure 1(a) on page 1420 in Yang clearly suggests a mechanism for storing information about the parity check matrix so that H_1^T can be used to generate codewords.

35 U.S.C. 103(a) rejection of claim 33.

Claims 4 and 5 fail to further limit claim 1 in a meaningful way, hence; are rejected for the same reasons as claim 1.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph D. Torres whose telephone number is (571) 272-3829. The examiner can normally be reached on M-F 8-5.

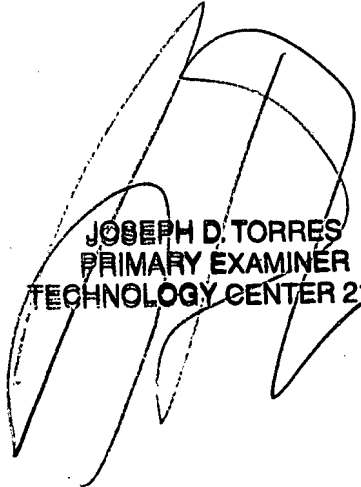
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jacques Louis-Jacques can be reached on (571) 272-6962. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Joseph D. Torres, PhD
Primary Examiner
Art Unit 2112



JOSEPH D. TORRES
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